MISSOURI DEPARTMENT OF TRANSPORTATION
MATERIALS ENGINEERING
Jefferson City, Missouri

Test Method
MoDOT T60
TESTS OF CELLULOSE AND MINERAL FIBERS FOR SMA MIXTURES

1.0 SCOPE

1.1 This method covers the procedure for testing cellulose and mineral fibers for use in SMA mixtures. Note 1

Note 1: This test procedure is an adaptation of the NAPA procedure IS 118 printed August 1994.

2. 0 PROCEDURE

2.1 Alpine Sieve Analysis.

2.1.1 This test is performed using an Alpine Air Jet Sieve (Type 200 LS). A representative five gram sample of fiber is sieved for 14 minutes at a controlled vacuum of 75 kPa. The mass of the portion remaining on the screen is determined.

2.2 Mesh Screen Analysis.

2.2.1 This test is performed using standard 850, 425, 250, 180 150, 106 µm sieves, nylon brushes and a shaker. A representative 10 gram sample of fiber is sieved, using a shaker and two nylon brushes on each screen. The mass of the amount retained on each sieve is determined and the percentage passing calculated.

2.3 Ash Content.

2.3.1 A representative 2 - 3 gram sample of fiber is placed in a tarred crucible and heated between 595 and 650 C for not less than two hours. The crucible and ash are cooled in a desiccator and the mass redetermined.

2.4 pH.

2.4.1 Five grams of fiber is added to 100 ml of distilled water, stirred and let sit for 30 minutes. The pH is determined with a probe calibrated with pH 7.0 buffer.

2.5 Oil Absorption Test.

2.5.2 A mass of five grams of fiber is accurately determined and suspended in an excess of mineral spirits for not less than five minutes to ensure total saturation. It is then placed in a screen mesh strainer (approximately 0.5 square millimeter hole size) and shaken on a wrist action shaker for ten minutes (approximately 30 mm motion at 240 shakes/minute). The shaken mass is then transferred without touching, to a tared container and the mass determined. Results are reported as the amount (number of times its own mass) the fibers are able to absorb.

2.6 Moisture Content.

2.6.1 Ten grams of fiber is measured out and placed in a 120 C forced air oven for two hours. The mass of the sample is then redetermined immediately upon removal from the oven.

2.7 Fiber Length.

2.7.1 The fiber length is determined according to the Bauer McNett fractionation.

2.8 Fiber Thickness.

2.8.1 The fiber diameter is determined by measuring at least 200 fibers in a phase contrast microscope.

2.9 Shot Content.

2.9.1 Shot content is a measure of non-fibrous material. The shot content is determined on vibrating sieves. Two sieves, 250 μm and 63 μm, are typically utilized. For additional information see ASTM C612.

3.0 REPORT

3.1 The report shall show the tests performed and the results of the tests.